

Technology for

Alaskan Transportation

Spring 1990 - Volume 15(1)
Alaska Transportation Technology
Transfer Program

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Don't Get Tanked!

The U.S. Environmental Protection Agency (EPA) estimates that about 25 percent of all underground storage tanks (USTs) leak. Many more will leak in the near future, perhaps even yours. If an UST has been in service more than 10 years, the potential for leaking increases dramatically, especially if it's not protected against corrosion and seasonal frost action.

Do you have any tanks that, including the piping, have 10 percent or more of their volume underground? That's the working definition of an UST, and EPA issued regulations, effective December 12, 1989, that govern tanks containing petroleum or hazardous chemicals. Not only must new installations meet the new criteria, you must also retrofit the old installations to the new criteria.

The rules cover minimum requirements in 3 areas: leak detection, corrosion protection, and spill/overflow prevention. EPA requires that the new systems retain their structural integrity for the entire operating life. Tanks must be installed, monitored and repaired according to nationally recognized

industry standards and codes. Owners and operators must follow proper tank-filling procedures. New and upgraded UST systems must use devices that prevent overfills and contain spills. The necessary actions and installations are addressed in a booklet we'll describe later.

The tank's age determines when leak detection must be installed. The schedule, in the booklet, shows that all tanks are to be renovated by December 1993. If you have a tank that was installed before 1965 or is of unknown age, your deadline has already come and gone! Corrosion protection and spill/overflow prevention for all UST systems must be provided within 10 years. You also must keep records to show that the UST meets regulatory requirements.

By fall 1991 (a recent postponement from 1990), EPA requires that UST owners carry \$1 million per tank in substance release liability insurance coverage. It won't be cheap. The Alaska Underwriters' Association says to expect a minimum of

(continued on page 2)

Pavement Patching

**A single 18,000-pound axle load on a truck has the same effect on the asphalt pavement structure as 9,600-plus passenger vehicles (NCRHP).
Think about the effect of an overloaded truck on the pavement.**

The primary effect will be potholes, and potholes mean patching. We presented some "how to" tips in the spring 1988 issue. (Request a copy from T2's Susan Earp if you don't have it.) The Federal Highway Administration has other tips about cold, wet weather patching. One of their labs evaluated more than 40 experimental mucky-weather binders and field tested 5: latex modified cutback, high float medium set (HFMS) emulsion, latex modified HFMS emulsion, butyl rubber modified HFMS emulsion, and butyl rubber and fiber modified HFMS emulsion.

In the spring, 205 repairs were made with a control mix (a good cold-mix patching material) and 41 were made with each of the 5 test binders—a total of 410 potholes. They were evaluated 30, 90, 240, and 400 days after placement. Of the six different materials, the best binders were those based on the HFMS emulsion. (The report "More Effective Cold, Wet-Weather Patching Materials for Asphalt Pavements" can be obtained from Susan.)

Pavement cracks are another result of traffic load on the pavement. When should cracks be repaired? In the warmth of

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TECHNOLOGY TRANSFER

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Federal Highway Administration and the
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Don't Get Tanked!

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\$3000 per tank per year. Right now, it's not available in Alaska.

Insurance companies are still developing the policies. At least two in-state carriers will offer coverage later this year. No insurance company will write a policy unless a site is "clean", which means that the EPA regs have been met, and all soils have no detectable contamination. The federal penalties for noncompliance are \$10,000 per tank per day.

Out-of-service storage tanks must either be removed or left in place after being drained, cleaned and filled with an inert substance. You must close outside access and check the site for contamination. If removal is the method you choose, you must first notify the Alaska Department of Environmental Conservation (DEC). They may send someone to observe (but not inspect). DEC has no jurisdiction until there is a leak. At that point, their first move is to have the owner submit a proposal for clean-up. The entire regulatory and enforcement issue is federal, but states can qualify and

apply to assume the responsibility, getting control closer to home. In Alaska, the UST regulations are still in federal control, but the state regulates confirmed leaks and spills.

Tank owner and operators must investigate suspected releases. Confirmed releases must be reported to DEC. The time limit for making the report varies, depending on the size of the release and whether it's onto land or into water. You are wise to request a copy of the Oil Pollution Regulations (from DEC) and/or a copy of HB68 (from the Legislative Information Office) for your reference shelf.

There are some exemptions from the EPA regulations: farm and residential tanks with capacities of 1,100 gallons or less that store motor fuel for noncommercial purposes; tanks storing heating oil for use on the premises; and tanks on or above floors in underground areas such as basements or cellars. However, if any of these tanks leak, you are liable under federal and state laws.

The booklet explaining UST regulations, and what you have to do and when, is available from your closest DEC office.

You can also write U.S. EPA, Office of Underground Storage Tanks, P.O. Box 6044, Rockville, MD 20850. EPA has developed a personal computer software package, requiring a hard drive, called "Reg-in-a-Box." It helps users understand and work with the regs. For the PC-compatible version (\$5 plus shipping and handling), call 1-800-426-3475; for the Macintosh version (\$3.50 plus shipping and handling), call 1-800-356-3651; or get a copy from a friend, it isn't copyright protected.

Another action item for you: last session the Alaska legislature worked on HB220, an act which could provide some financial assistance to UST owners for retrofit work and spill cleanup. It's still in flux. Contact your representatives, senators or the Legislative Information Office for information and to have input.

(Adapted from R2T2, Fall 1989, and assisted by Alaska Department of Environmental Conservation, U.S. EPA, Alaska Legislative Information Office, and Alaska Division of Insurance.)♦

News & Views

Blade Those Bumps—Slowly

Grader operators need to be patient people. The slower they go, the smoother the road. In fact, going faster than 3 mph causes the blade to chatter, to vibrate up and down. Even though the road seems smooth, the beginnings of teeth-jarring WASHBOARD are there.

Once those alternating rows of compacted and loose gravel are established, traffic action moves particles out of the softer areas, digging "mini-ruts." This happens quickly where traffic is channelled and on hills, where wheels push harder.

There are other preventative things that you, as grader operator, can do besides watching your speed. Try tilting the mold board forward so that the blade "drags," rather than cuts into the surface. Angle the blade at 30-45 degrees to the grader's direction of travel.

Treat grading as a good rainy day activity. A light rain softens the road crust, making it easier to work. Too much rain, though—a downpour or several days of drizzle—often makes for a mucky mess. The kind of materials you're dealing with makes a difference too. Some, such as alluvial soils, soak up the rain better. The key is: use your judgement; know your material; know how wet it is. Follow up grading with a vibratory roller. The grading will last longer and you get a better surface. If the road is real rough and natural dampness doesn't provide enough moisture, add water to get good compaction.

When the road gets too washboarded and full of potholes, it's time for the surface to be scarified, bladed smooth, and the crown reestablished. (See the Planning Insert for a discussion of crown slopes.) Scarify at least as deep as the deepest potholes. During summer, apply a dust palliative (a chloride or lignin) after scarification. This helps surface compaction, reduces dust and promotes crust formation. If a palliative isn't used, simply wetting the surface will temporarily reduce dust problems. Again, follow this up with a vibratory roller to help recompaction.

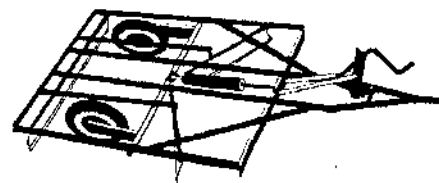
(Adapted from *Nuggets and Nibbles*, October 1989 and assisted by Alaska DOT&PF.)♦

Guardrails: Tool or Hazard?

Tools help, hazards hurt. Guardrails can be either, depending on the design and installation. They only come into play when there's already been an accident, and their role is to keep the accident from getting worse. That hasn't always been what happens. A new video and pamphlet, "Guardrail Installation and Repair," summarizes the evolution and current wisdom of life and property saving guardrails. You can borrow the film from our T2 library by checking it off on the video order form. We're glad to announce it; we co-sponsored it!♦

Little Grader for a Big Softie

Gravel roads are at their worst during spring thaw—just when they're too soft to support a heavy road grader. A Wisconsin road manager built a light weight road leveler from an old farm disk. Alaska doesn't have many old farm disks lying around, but we should be able to adapt the idea. The rig smooths and levels the road surface without cutting off frost heaves. After the thaw, then, the high spots won't become low spots. Pulled behind a 5-7 yard dump truck weighted with 2 yards of gravel, it follows road contours.



Cut the disk frame down to 8 feet, and use the disk gang mainframes to hold the blades, which can be used snowplow blades. They're attached with angle iron. The two smaller front-cutting blades angle toward the center. The two blades cut a windrow to the middle that the rear blade levels out. Depth adjustment is a crank at the hitch, and the entire unit raises and lowers by a two-way hydraulic ram that's controlled from the cab.

In addition to doing a good job, it's inexpensive. The used parts cost about \$150 and it took about 40 hours to fabricate.

For more information, contact Larry Peterson, Town of Beaver, Rte. 3, Pound, WI 54161, (414)897-4378.

(Adapted from *Crossroads*, Spring 1989.)♦

1990 National RTAP Conference Networking the '90s

University of Alaska Fairbanks
August 5-9, 1990

The National Conference is shaping up very nicely—the registration packets should be mailed out by the end of March. The “Networking the '90s” theme is woven throughout the technical program, which focuses on: how T2 centers communicate with each other and with other agencies and organizations external to T2; the federal role; and national policy and the future of RTAP. Registration and spouse event fees will be similar to last year.

Optional dinner and evening events will give you excellent meals and entertainment with a decidedly

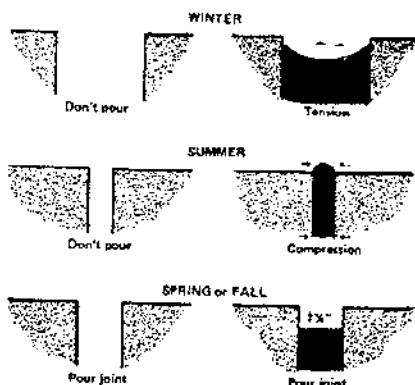
Alaskan flavor, focusing on our colorful past and present. Spouses, guests and kids have action packed days planned for them.

We cannot stress strongly enough the necessity of making your travel reservations early. And if you plan to stay off campus, do the same with your hotel accommodations. Reserve NOW. Alaska receives more than twice its own population in visitors each summer, and you T2 folks are competing with the cut-throat tourist trade for airplane seats, good fares, any optional trips, and off campus reservations. ACT NOW! ♦

SUNSHINE TRAVEL URGES YOU TO MAKE YOUR AIRLINE RESERVATIONS NOW. CALL 1-800-622-6449; MENTION RTAP. BOOKING LOWEST FARE RESERVATIONS FOR THE CONFERENCE IS ALREADY BECOMING DIFFICULT.

Pavement Patching (continued from page 1)

summer? Our source cautions not summer nor winter, but rather spring or autumn. Typically, joints and cracks are resealed with a poured-in-place liquid sealant. Summer warmth expands the pavement, the joint is narrow, and summer-poured sealant is in tension for most of the year. Winter is just the opposite; the joint widens, and the sealant remains in compression in other seasons. The spring or autumn pour results in a sealant that's slightly compressed in summer and in slight tension in the winter, minimizing the strain. If the work can be scheduled for fall, it'll be fresher for the onslaught of winter storms and spring thaws.



Unfortunately, the often-wet spring and fall weather causes moisture problems, even after the pavement has been dry for several days. Try using a commercial heating unit (heat lance) to dry the cracks with a flow of hot air. The crack scaler can then be applied with the added advantage of having contaminants removed.

(Adapted from *T2 Clearinghouse Newsletter*, May-June 1989; and *The Wheel*, Spring 1989.) ♦

Earth Day and Alaskan Transportation

April 1990 is the twentieth anniversary of Earth Day. As part of this observance, T2 is sponsoring a technical forum April 17 (see calendar) on environmental aspects of transportation.

T2's Larry Johnson will discuss recycling and hazardous wastes in transportation.

Two others on the billing are Rich Seifert, UAF Cooperative Extension Service and Kelly McMullen, Fairbanks North Star Borough Environmental Services. Rich will discuss lifetime vehicle costs, an important part of any development plan. Kelly will talk about the inspection and maintenance (I/M) program that the borough has instituted because of Fairbanks' continued air pollution problem. He'll also discuss alternative fuels. ♦

Technology for Alaskan Transportation is a quarterly newsletter that informs local transportation people in government and industry of useful publications and services. The newsletter reports on practical information, new technology, and learning opportunities such as workshops, seminars and videotapes. To get on our mailing list, to receive any of our services, or to contribute to the newsletter, contact:

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About Our Program

The goal of the Alaska Transportation Technology Transfer Program is to help transportation agencies obtain useful information and training related to roads, bridges, and public transportation. In addition to our newsletter, we provide low-cost seminars and workshops, provide copies of useful technical reports and videos upon request, and answer phone and mail inquiries related to transportation technology. If we don't have the answer, we will refer the question to a suitable specialist.

The Alaska Transportation Technology Transfer Program is a cooperative effort between the Alaska Department of Transportation and Public Facilities, and the University of Alaska Fairbanks, Institute of Northern Engineering. This program is funded by the Federal Highway Administration and the Alaska Department of Transportation and Public Facilities (DOT&PF).

The following people are involved in the program.

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Calendar of Events

We will be happy to include any relevant events you would like to publicize. For more information about events in Alaska, Call Sharon McLeod-Everette at (907)474-2475, Larry Johnson at (907)474-7637, or Michelle Johnson at (907)474-5428.

1990

April 6-7, 1990: IRWA Course 801 (Revised & Expanded) Land Titles. Sponsored by Arctic Trails Chapter 71, International Right of Way Association. Embassy Room, Regency Hotel. Tuition: \$215.00, member; \$250.00, non-member. Contact Peter Schnaars, 907-452-1414.

* **April 17: UAF Earth Week; Transportation and the Environment.** University of Alaska Fairbanks, Wood Center Multi-Level Lounge. Contact Larry Johnson, 907-474-7637.

April 23, Juneau; April 24, Anchorage; May 3, Fairbanks: Principles of Asphalt Mix Design and Specifications. Contact Pat Kemp, 907-

789-6247 (Juneau); Tom Moses, 907-338-4200 (Anchorage); or Paul Misterek, 907-451-2228 (Fairbanks) by April 15.

* **April 25-27: Inspection of Asphalt Concrete Pavements.** Clarion Hotel, Anchorage. Contact Michelle Johnson, 907-474-5428.

* **April 30-May 2: Inspection of Asphalt Concrete Pavements.** University of Alaska Fairbanks. Contact Michelle Johnson, 907-474-5428.

April-May: BLM Firefighter Training. These classes are open to employees of the U.S. Forest Service, State of Alaska, and Department of the Interior agencies. Nominations generally are due by March 1 for classes in April and by April 1 for classes in May. Contact Andy Anderson, 907-356-5663 or write Alaska Fire Service Branch of Fire Training, P.O. Box 35005, Fort Wainwright, Alaska 99703.

May 5: Practical Environmental Auditing. Sponsored by Arctic Trails Chapter 71, International Right of Way Association. Hutchison Career Center

Multipurpose Area (field location to be announced). Tuition: \$125.00, member; \$175.00, nonmember. Contact Sharon McLeod Everette, 907-474-2475 or Pat Thayer, 907-474-2419.

May 18: 7th Annual Alaska Transportation Forum. University of Alaska Fairbanks. Contact Dr. Lutfi Raad, 907-474-7497.

* **May/June (date to be announced): Environmental Auditing for Transportation Programs.** University of Alaska Fairbanks. Contact Michelle Johnson, 907-474-5428.

June 4-5: Damaged Disk, File and Data Recovery for IBM PCs & Compatibles. Anchorage, AK. Tuition: \$795.00 (10% discount each for three or more registrants) Phone toll free: 800-345-8016.

* **August 5-9: National RTAP Conference, "Networking the '90s."** University of Alaska Fairbanks. Contact Michelle Johnson, 907-474-5428.

* **T2 Short Courses**



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Water, Water Everywhere—Too Many Drops to Drain!

Spring time is water time...over, on, and under the ground. Wetness rules. Water ran across the ground before we built our roads, and now it runs across our roads...sometimes according to our plan, other times in spite of it.

Water's effects are obvious. Ice plugs block culverts. Roadside banks slough during freeze and thaw cycles. The debris washes into ditches, damming them. Beavers, those masters of hydraulic engineering, contribute to the havoc. (Remember the "beaver baffle" we described in the Fall 1988 issue? If not, call T2's Susan Earp for a copy.)

By applying Murphy's Law (if anything can go wrong, it will), the culverts will plug, so that ditches overflow, causing ruts, rills, and pavement undermining. Anticipate the rest: flood, washout, stressed crews, overspent budget. You've got a wet road in cold country, so you probably have frost heaves. Add traffic and you have potholes. Down at the bridge, debris washes onto the piers and stresses the structure. In extreme cases, the bridge collapses. (O'Brien's Law says that Murphy was an optimist!)

The point? Pay attention to proper drainage design and maintenance on rural roads.

A proper drainage system has four physical elements—roadway, shoulders, ditches, and culverts. These work together to:

1. prevent water from getting into the road surface,
2. move water to the side ditches, and
3. carry water away from the roadway.

The fifth element of a proper drainage system is timely maintenance. Roads with all the proper physical elements will still flood, develop cracks and potholes, and even wash out if maintenance is neglected.

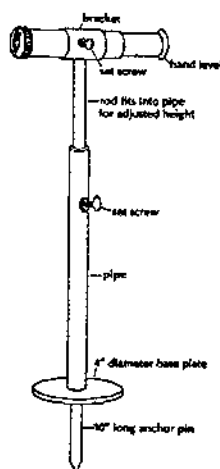
Some tips to help assure good drainage:

- * Avoid the "trench" construction technique. That's where only the intended road surface width is excavated then filled with subbase and base material. Extend the cut-and-fill to the outer edge, using the same subbase and base material for the entire width.

- * Build and maintain a roadway crown to drain water from the surface. A good rule of thumb is 1/4" per foot of lane width for paved roads and 1/2" for gravel roads. A two-lane paved road with 12-foot wide lanes has a 3" crown, and the same gravel road has a 6" crown.

- * An easily built hand level holder (Figure 1) helps grader operators maintain the crowns of gravel roads. Bob Faulkner, Missouri Highway and Transportation Department, built this simple, rugged holder that's space-efficient and sets up fast. You push the rod's base into the ground. The person taking readings can move around and still maintain the reference elevation.

FIGURE 1



- * Slope the shoulders as much as or more than the crown so that water flows to the ditches. Otherwise, water builds up between the shoulder and road, flooding traffic lanes.

- * Just as shoulders are an extension of the roadway, ditches are an extension of the shoulders. Smooth the transition to a shallow foreslope. Gentle side slopes minimize erosion, and they're safer for motorists and maintenance crews. If you can't avoid steep-sided ditches, controlled vegetation helps keep soil in place. Otherwise, you must consider paving the ditch to avoid erosion problems.

- * Construct the ditch at least 1 foot below the bottom of the gravel base and with a 1 percent gradient (0.5 percent minimum). The objective is to carry water away from the roadway and into a natural waterway. Don't let water stand; keep it moving. Standing water saturates the subsurface material. The road won't drain during the next storm. Standing water also reduces ditch capacity.

- * Clean ditches move water efficiently. Generally, tools needed for maintaining drainage facilities aren't specialty items. Picks, shovels, jim-mee bars, and muscle are usually enough.

- * Ditches in loess soils get blocked regularly by eroded material unless the roadcut is formed and drained well. In dry silty loess, cut the bank almost vertically, 1/4:1, to reduce the area exposed to rainfall and snow buildup (Figures 2 and 3). In clayey loess, slope the cut at about 2.5:1, and reseed for erosion protection from rain and snow. Water erodes loess easily. Washington State DOT has published two reports on the topic: Engineering Design in Loess Soils in Southeastern Washington (WA-RD-145.1, December 1987) and Design Guide for Cut Slopes in Loess of Southeastern

Washington (WA-RD-145.2, January 1988). Contact Washington State T2 (206-753-0143) for copies.

FIGURE 2

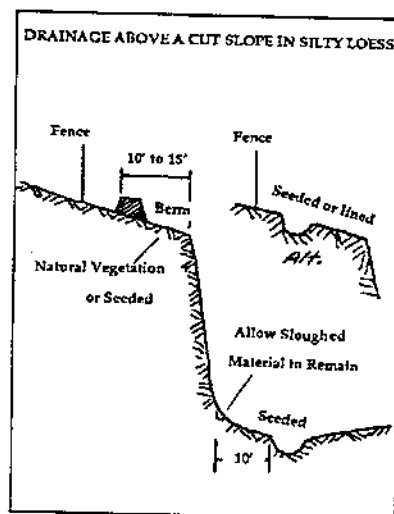
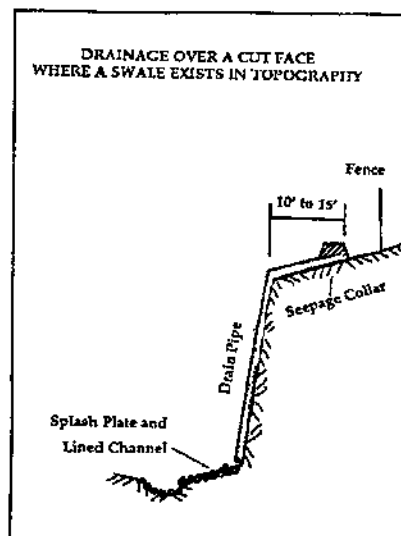


FIGURE 3



* Loess is not the only sensitive factor that Alaskans deal with. There's the chicken-'n-egg problem in our permafrost areas: thermal erosion can cause drainage problems and drainage can aggravate thermal erosion. Avoid concentrating flow through culverts and onto ice-rich soils where nonconcentrated flow was the norm. Concentrated flow results in combined thermal and hydraulic erosion.

* Good design saves money. Be sure culverts support the cover material and traffic loads, pass the appropriate drainage volume, and provide adequate fish passage. Twelve inches of compacted soil over the pipe is the minimum cover. Arch and elliptical pipes or shallow box culverts are recommended where cover depth is limited. For roadway cross culverts, the minimum recommended size is 18", and the minimum recommended elevation difference is 6" between inlet and outlet. Try to plan for a 2 1/2 feet per second water velocity. This will keep sediment from accumulating in the pipe, but will not cause extensive erosion at the discharge end.

* Side drains, such as culverts under driveways, prevent blockage and flooding. The same 18" minimum diameter is recommended. Driveways need to either slope away from the road or be graded with a low point over the culvert. This prevents water washing onto the road from the driveway.

* Inspect culverts regularly, but especially after a heavy rain. You'll get the most information about drainage problems during those times. Recruit the entire crew, regardless of assignment or expertise; ask them to

make a habit of checking, even on their "off" time. Some managers develop written inventories of drainage facilities, which helps assure that they'll all be checked.

* One important aspect of drainage maintenance is to keep a close eye on culvert outlets. Erosion and scour occur quickly here and result in serious damage. Rock and broken rubble dumped in these spots will reduce the water's energy and will halt or reduce the erosion.

* Maintain culverts so they perform as originally intended. If the hands-on, brute-force techniques of clearing a clogged culvert don't work, consider a pressurized water jet. Put a large, sturdy tank into a dump truck bed. Take along a high pressure pump, hose and nozzle, and another pump and hose for filling the tank from a stream. The high pressure will usually eat its way through the soil blockage. If this doesn't work, chemicals are available that break the bond between soil particles, making the soil much easier to flush from the pipe.

Keep in mind that your best approach to drainage is to maintain natural surface water flow conditions as much as possible.

We don't know who said it, but it emphasizes our point: if you want a good road, take care of the water—it was there first.

(Adapted from KUTC newsletter, May 1989; Maine Local Roads News, Winter 1988-89; TTAP roadtalk, Spring 1989; The Northwest Technology Transfer Center Bulletin, Spring 1989; Rural Transportation Technology, December 1989; and CRREL Report 80-19.)♦

For More Information

For back issues of our newsletters and notes, or to get on our mailing list, write: Publications, Transportation Technology Transfer Program, University of Alaska Fairbanks, 233 Duckering Building, Fairbanks, AK 99775-0660. For more information, you can also call (907) 474-7733.

Directories and Subdirectories

by Billy Connor

In the last newsletter we discussed the need for directories and subdirectories. Let's take a minute to review before I tell you how to create, delete and manipulate them. Directories, as you recall, are similar to your filing cabinets. They simply provide the means to organize your files in a systematic way. How you organize them is entirely up to you, but be consistent. There are a few things you should keep in mind when you set up your filing system.

The system you choose should allow you to quickly find the files you need. For example, if you need to find a response to Mr. Jones last June about an inquiry, you should be able to look in the appropriate subdirectory. I often use my computer files to look up such information because it is quicker than looking in the paper files. I periodically purge the files on my hard disk after copying them onto floppy disks. Even my floppy disks are handled in the same manner that I handle my hard disk directories.

Don't over-organize. There is a temptation to organize your subdirectories to the point where there are only a couple of files in each one. If you get to this point, you are only a little better off than when you had no directories.

MAKING A DIRECTORY

Note: "^(carat) means put a space here; all you do is hit the space bar. In the commands used in this article, the space is critical for the command to work.

The DOS command to make a directory is MD. For example, if you wish to make a directory called WORDPROC you would type: MD^WORDPROC at the C:> prompt. The computer will then create WORDPROC as a subdirectory of the root directory. The root directory is like the file room. It is the largest unit that can be subdivided. Try it. I'll show you how to remove it later.

If you wish to create a TEXT subdirectory under WORDPROC all you need to do is type at the prompt: MD^C:\WORDPROC\TEXT. By including the entire path, it doesn't matter which subdirectory you are in. You can create additional subdirectories in the same manner.

REMOVING A DIRECTORY

Removing an existing directory is similarly easy. The command is RD. For example, if you want to remove the

C:\WORDPROC directory all you need type is RD^C:\WORDPROC. However, there is a twist to this. If there are files or subdirectories in the C:\WORDPROC directory, DOS will issue an error message telling you that it cannot remove the directory until the files are removed. If you need to remove files type in ERASE^C:\WORDPROC*. * followed by enter. DOS will ask you if you really want to erase all the files. Make sure this is really what you want to do before saying yes. You can recover, but it is better not to make this mistake. (Recovery can't be done with DOS. Several software packages are marketed for this. Ask your dealer.) If you created the TEXT subdirectory, you will need to erase all the files in that directory by typing ERASE^C:\WORDPROC\TEXT*. *. Then remove the TEXT subdirectory by typing RD^C:\WORDPROC\TEXT. This method is safe if you are not familiar with DOS. There are a couple of short cuts, but I will leave it to you to find them.

COPYING FILES FROM ONE DIRECTORY TO ANOTHER

If you want to copy a file from C:\WORDPROC\TEXT\MYFILE.TXT to another directory, DOS provides a relatively easy way to do this through the COPY command. The general command takes the form COPY^fromfile^tofile. For example, to copy the above file to C:\WORDPROC\MEMO subdirectory, the command would be COPY^C:\WORDPROC\TEXT\MYFILE.TXT^C:\WORDPROC\MEMO. DOS will assume you wish to leave the name the same in the new directory unless you specify a different name. If you wish to rename the file to NEWFILE.MEM the command would be COPY^C:\WORDPROC\TEXT\MYFILE.TXT^C:\WORDPROC\MEMO\NEWFILE.MEM.

Let's take this one step farther. Suppose you want to transfer the file to a floppy disk to give to a co-worker. The command would be COPY^C:\WORDPROC\TEXT\MYFILE.TXT^B:. You could also rename the file as shown in the previous paragraph.

DOS uses the * and ? as wild cards and global characters respectively. They can be used to specify a group of files with one command. The symbol ? substitutes for one character, and * substitutes for up to eight characters. Wild cards are permissible for the copy command. That means you can

Alaskan Transportation Technology Transfer Program

Computer Notes

copy all files by using *.* for the file name. For example, if you wish to backup the C:\WORDPROC\TEXT directory to a floppy disk, use the copy command: `COPY^C:\WORDPROC\TEXT*.*^A:`. If you wish to copy only those files that have the .MEM extension you would use: `COPY^C:\WORDPROC\TEXT*.MEM^A:`. However, all the files must fit onto the disk. If they don't, DOS will issue an "Insufficient disk space" error. The copy command is not the best way to backup your hard drive unless the directory contains only a few files.

WHAT'S IN THE DIRECTORY

DOS provides the ability to find the contents of a directory through the DIR command. Using this command is much like using the COPY command. If you want to list the files in the C:\WORDPROC\TEXT subdirectory, type: `DIR^C:\WORDPROC\TEXT`. You may find that there are too many files to list on the page. By modifying the command to `DIR^C:\WORDPROC\TEXT /W`, DOS will display the files in five columns. If you do so, you will note that the information displayed will be less with the second procedure. Wild cards are also permissible in this command. For example, if you wish to display all the files with the extension .MEM, type: `DIR^C:\WORDPROC\TEXT*.MEM`. If you name all your files dealing with budget information `FY?????.bgt`, you could use the command `DIR^C:\WORDPROC\TEXT\FY*.BGT`.

Here's a neat little trick to list only the subdirectories. Type `DIR^*.*`. What shows up on your screen is a list of only the subdirectories.

CHANGING DIRECTORIES

The command for changing directories is CD path, where the path is the directory you wish to go to. To move from the current directory to C:\WORDPROC\TEXT, you would type `CD^C:\WORDPROC\TEXT`. You can use the ERASE, COPY and DIR commands without the path when you work with files that are stored in the same directory that you're in. To list the files in this directory, simply type DIR.

Have you figured out the shortcut I talked about in the "Removing A Directory" paragraph? If so, be careful with it. You could lose everything.

SUMMARY

We have discussed how to make and remove directories, copy files and look at the content of directories. These tools provide most of the ability to move around in your disk space. However, you may feel this requires a lot of typing, and it does if you type it every time. There is a way to reduce your repetitive typing tasks. You can organize your computer files, grouping similar ones together, and establish short commands to get to those files. Batch files, which were introduced in the last "Scrambled Disks," will be the topic in the next issue. They allow you to avoid monotonously retyping the commands needed most often to access the files you use all the time.

Scan through your DOS manual. A wealth of information is there if you take the time to dig it out. For those of you who prefer not to read manuals (I don't blame you) there are many books on computers. You may want to visit your library or local bookstore and browse them. ♦

If you have topics you wished covered or if you simply have a question about computers and how to use them, please drop us a line. We are not experts in all of the hundreds of software packages, so please limit your questions to hardware and DOS.



For More Information

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SHORT BITS

RTAP ON-LINE NOW AVAILABLE

The December 1989 issue of CTR (Community Transportation Reporter) announced that the Rural Transit Assistance Program's (RTAP's) electronic bulletin board service is ready to receive calls. It offers informational bulletins, message and conference services, classified advertisements, legislative status reports, and abstracts of documents.

If you have a personal computer, modem, communications software and telephone line, RTAP On-line is accessible for only the cost of a long-distance phone call. In a promotional effort, the Community Transportation Association of America (CTAA) is making modems and communications software available to interested people for a small charge.

For more information on this offer, and for a free "User's Guide and Introduction" to RTAP On-Line, contact the RTAP Hotline at 1-800-527-8279.

TRAINING RESOURCES

The second edition of the *Training Materials and Resources for Rural and Specialized Transit Systems*, which lists training resources ranging from accounting to vehicle management, is available for \$5.00. Copies can be obtained by calling the RTAP Hotline at 1-800-527-8279.

* * * * *

A third RTAP training module titled "Emergency Procedures for Rural Transit Drivers" has recently been released. This module contains a videotape, workbook and manager's handbook. Training focuses on the preparedness of drivers, and emphasizes the important role the driver

assumes during an emergency situation.

DRUG TESTING

In November, 1988 the Urban Mass Transportation Administration (UMTA) issued regulations on control of drug use in mass transportation operations. The intent is to eliminate the use of illegal drugs in the transit industry. Drugs covered are marijuana, cocaine, opiates, phenylcyclidine (PCP), and amphetamines. The anti-drug regulations cover vehicle operators, dispatchers, maintenance personnel and anyone supervising these people, and require that grantees implement four major anti-drug program elements: a policy on drug use; an educational program; a drug-testing program; and record-keeping procedures.

For rural and small urban transit operators, those regulations were due to go into effect by the end of 1990. *However, the regulations have been suspended until further notice.* This action, announced in the January 25, 1990 *Federal Register*, is in response to a federal appeals court decision, which ruled that UMTA exceeded its legislative authority in issuing the detailed, stringent set of procedures for dealing with drug use in the transit industry. The unanimous three-judge decision said Congress intended that UMTA deal with safety hazards in a case-by-case development of local solutions instead of national, impersonal rulemaking procedures with a mandated solution that would likely not be responsive to concerns at a local level.

While the appeals court decision is a broad challenge dealing with the basic legislative authority for the regulations, it does not effect the January, 1989 regulations regarding a

drug-free workplace. Those regulations are based on a specific piece of legislation, and don't require any testing procedures. They are not at issue in this particular case. The same appeals court upheld the federal Department of Transportation's authority to require drug testing for its own safety-related employees.

UMTA has not yet decided what the next step will be. An option is to file an appeal to the U.S. Supreme Court. Another option is to obtain the specific legislative authority which the court found deficient.

In national legislative activity, both the Senate and House have approved bills on the subject of drug testing. But the House-passed measure does not cover transit. If the House members of a conference committee accept provisions giving UMTA regulatory authority in this area, the now-suspended regulations could very well return later in the year.

The remainder of this article is excerpted from "Community Transportation Reporter," December 1989, Volume 7, No.12. The article, titled "Anti-Drug Regulations: Gearing Up for Compliance," written by Charles Dickson and Melanie Lacks, explains very clearly what the new regulations require. If the current suspension of implementation is lifted this information will be especially critical. The eligibility to continue receiving UMTA funding will hinge on institution of the regulations.

Step 1

Establishing A Policy

The first step in complying with the regulations is to establish an anti-drug policy. This policy must be adopted by the governing body of the transit system and prohibits any safety-sensitive employee from working under the influence of prohibited drugs.

Step 2 Initiating Training

Transit operators will also be required to supply employee training on drugs and their effects. The training will have to include distribution of informational material, local drug hotline numbers (if available), information on the system's policy and information on the effects of drugs on performance. Supervisors are required to receive at least an additional hour of training in order to make reasonable-cause testing decisions.

Step 3 Developing Testing Procedures

The most time consuming, costly and controversial portion of the anti-drug regulations require UMTA-funded recipients to establish drug testing procedures. Urine tests to detect the presence of the five prohibited drugs are required in the following situations: pre-employment, reasonable cause, post accidents, random and return to duty. Employees may request re-tests, at their own expense, if they fail a test in one of the above categories.

The laboratory conducting the test must be certified by the Department of Health and Human Services. The regulations require an immunoassay test as the initial screen. If this first test is positive, a more accurate and expensive gas chromatography/mass spectrometry test is used to confirm the results.

Agencies must designate collection sites to receive the samples to be tested. At the collection sites, employees provide urine samples for the purposes of testing. The sites can be established by the transit system or it may designate a physician's office, medical laboratory or emergency room.

After the sample has been tested, the results will be forwarded to a medical review officer (MRO). The MRO reviews the findings of the test

and has the final say in determining a positive or negative test result.

Step 4 Maintaining Records

The final step in complying with the regulations is record keeping and reporting. All records concerning program administration, sample collection and test results must be maintained by the agency, which must ensure privacy and confidentiality. Results of positive tests must be maintained for at least five years.

Operators will be required to submit semi-annual reports on their drug testing programs detailing the total number of tests conducted, the number of tests in each category, number of positive tests, disposition of persons who did not pass tests and the number of positive tests by prohibited drug.

Following all of this, the agency will be required to certify that it is complying with all requirements of 49 CFR Part 653 (the drug testing regulations).

If grantees use contractors of other service providers (for example, maintenance work at local garages in their transit service) the contractors also must satisfy all requirements of the anti-drug regulations.

All employees of local maintenance contractors that either perform maintenance, or supervise those who perform maintenance, must either be included in the recipient's anti-drug program or establish their own program. This includes all phases of testing—pre-employment, random, reasonable cause, post accident and return to duty. Each recipient will be responsible for ensuring that each covered contractor is in compliance with the regulations.

Help is Available

UMTA has taken a number of steps to assist small operators in complying with the anti-drug regulations.

UMTA has published *Implementation Guidelines for Anti-Drug*

Programs in Mass Transit which explains the essential requirements of the anti-drug program. The process for implementing the various requirements are defined in logical order with examples of necessary forms and useful procedures.

UMTA has also awarded grants to six states: Florida, Montana, Ohio, Pennsylvania, Texas and Washington. These states will develop and disseminate information on complying with the anti-drug regulations to the operators in their state and neighboring states. Ohio has already produced a manual for its operators (See Oct. 1989 CTR, page 13).

The Community Transportation Association of America has designed one- or two-day training courses to help transit operators comply with the new regulations. The one-day session covers the basics of setting up and operating a drug testing program as well as the effects of the prohibited drugs on performance.

The two-day course covers the effects of the drugs in more depth and can help train transit managers who can then instruct supervisors on making reasonable-cause drug testing judgements.

For more information on publications or training referred to in this article, call the RTAP Hotline, (800)527-8279.

ALASKA TRAINING

In Alaska, Department of Transportation and Public Facilities (DOT&PF) Statewide Transit Coordinator Bruce Wells is heading up the drug compliance effort. Drug compliance training may be provided later this year, most likely utilizing what Washington is developing. We hope to advertise that training in this newsletter. Mr. Wells can be reached at his DOT&PF office by calling 465-2957. ♦

For More Information

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NEW PUBLICATIONS AVAILABLE FOR LOAN

Number 19, 1990

Place a check by the publications you wish to receive.
Last=555

___ 1983 Federally Coordinated Program of Highway Research, Development, and Technology, ID-532, USDOT/FHWA, May 1984, 44pp.

___ Aiding Pedestrian Traffic, The Federal Role In..., ID-535, USDOT, 8pp.

___ Agreement of Understanding Between the State of Tennessee Department of Transportation and The University of Tennessee, ID-528, August 1, 1975, Tennessee Department of Transportation.

___ Base and Subbase Repair, ID-548, Louisiana Transportation Research Center, 1988, 4pp.

___ Bridge Gross Weight Formula, ID-536, USDOT, March 1982, 11pp.

___ Crack Repair In Asphalt Pavement, ID-550, Louisiana Transportation Research Center, 1988, 3pp.

___ Evaluation of Traffic Operations - Positive Guidance Projects, ID-540, FHWA, June 1980, 17pp.

___ Forest Roads Built with Chuckwood, ID-516

___ The Glove Bag Book and Asbestos Maintenance Safety Guide, ID-526, Source Finders Information Corporation, 1988, 103pp.

___ Guidelines for Successful Traffic Control Systems, ID-515, FHWA, Volume I, Exclusive Summary, August 1988, 41pp.

___ Inductive Loop Detectors: Theory and Practice, ID-519, 76-2 Implementation Package, U.S. DOT, FHWA, January 1976.

___ Kansas Rigid Pavements Serve Years Without ILL, ID-514, Survey of urban concrete streets in Kansas reveals decades-long service life in many instances; low maintenance costs indicated, 3pp.

___ Labor Management Relations, ID-537, DOT, June 1978, pamphlet.

___ Management Control System for Street Maintenance: A User's Manual, ID-525, OSU Center for Local Government Technology, November 1977, 185pp.

___ Manual On Identification, Analysis and Correction of High Accident Locations, ID-541, Missouri State Highway Commission, April 1976, 135pp.

___ More Effective Cold, Wet-Weather Patching Materials for Asphalt Pavements: Technical Summary, ID-542, FHWA-RD-88-001, January 1989.

___ Nationally Coordinated Program of Highway Research, Development, and Technology, ID-524, Annual Progress Report Executive Summary Fiscal Year 1988.

___ New Technologies for Dewatering, ID-555, John L. Walkinshaw, P.E., G.E., FHWA.

___ Nuclear Testing for Density Control of Concrete Pavement: Slide Narrative, ID-538, Colorado Division of Highways.

___ Patching Unpaved Roads, ID-547, Louisiana Transportation Research Center, 1988, 7pp.

___ Portable Breakaway Sign Supports, ID-531, USDOT/FHWA, June 1977, 2pp.

___ Pothole Repair In Asphalt Concrete Pavement, ID-552, Louisiana Transportation Research Center, 1988, 4pp.

Alaskan Transportation Technology Transfer Program
Notes on Publications and Videos

- ___ **Pothole Repair In Asphalt Surface Treatment**, ID-551, Louisiana Transportation Research Center, 1988, 4pp.
- ___ **Proceedings From The National Conference On Effective Planning Techniques For Small and Medium-Sized Urban Areas**, ID-614, FHWA, December 6 - 8, 1988, Phoenix, Arizona, 546pp.
- ___ **Quality in the Constructed Project: A Guideline for Owners, Designers, and Constructors**, ID-521, Volume 1, Manual of Professional Practice, ASCE, May 1988.
- ___ **Recycled Asphalt Concrete**, ID-518, 76-2 Implementation Package, U.S. DOT, FHWA, September 1975.
- ___ **Regraveling**, ID-544, Louisiana Transportation Research Center, 1988, 3pp.
- ___ **Repair of Depressions, Rutting, and Corrugations**, ID-549, Louisiana Transportation Research Center, 1988, 3pp.
- ___ **Road Surface Management for Local Governments-Six Case Studies**, ID-534, USDOT/DOT-1-85-06, January 1985, 110pp.
- ___ **Slotted CMP Surface Drains**, ID-529, USDOT/FHWA, July 1973, 17pp.
- ___ **Smoothing and Reshaping of Earth and Gravel Roads**, ID-545, Louisiana Transportation Research Center, 1988, 4pp.
- ___ **State and Local Highway Training and Technology Resources**, ID-523, FHWA/AWA, January 1989.
- ___ **Stripe Removal by High Temperature Burning with Excess Oxygen**, ID-539, USDOT, June 1977, 15pp.
- ___ **Techniques for Pavement maintenance and Rehabilitation Using Asphalt**, ID-543, The Asphalt Institute/Montana State University, Manual to accompany videos on Pavement Maintenance.
- ___ **Tires for Subgrade Support**, ID-554, by Eric Geisler, Minnesota DNR, Division of Forestry, April 11, 1989, 7pp.
- ___ **Traffic Control Systems Handbook: Executive Summary**, ID-533, USDOT/FHWA, February 1976, 17pp.
- ___ **Uniformity Efforts in Oversize/Overweight Permits**, ID-527, TRB, 1988, 79pp.
- ___ **Use of Discarded Tires In Highway Maintenance**, ID-553, Translab Design Information Brochure #TE/REC/1/88, Caltrans, 4pp.
- ___ **A User's Manual for a Management Control System for Street Maintenance**, ID-517, FHWA, November 1977, 185pp.
- ___ **Uses of Asphalt Rubber**, ID-522, ARPG, 2pp.
- ___ **Water In Pavements**, ID-530, slide tape presentation script, FHWA, 24pp.

These publications may be borrowed for two weeks. If you wish to receive a copy of any of the above publications to keep, please contact Susan Earp at the Alaska Technology Transfer Program at 474-7733 to see if it can be obtained or if duplication is possible. Please print your name and address below, and mail to:

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___ **Backing - You Owe It To Yourself**, ID-121, Pennsylvania DOT. Equipment safety to use during backing. Operating skill, What is happening, Every situation is different (OWE). January 1983, 20mins.

___ **Crack Sealing**, ID-125, Pennsylvania DOT. Cracks lead to pavement failure, covers elements of repair for bituminous surface crack sealing on a rigid or flexible base. Elements include materials, equipment, preparation, sealing and safety. March 1987, 8:26mins.

___ **Dead Wrong**, ID-120, Pennsylvania DOT, Note: Tape is made from 16mm film, does bounce. Accidents caused by the seduction of speed. *Subject material may be upsetting to some.* 1981, 28mins.

___ **Erosion Control Material Installation**, ID-126, Pennsylvania DOT. Site example of how material is used. No narrative. November 1985, 30mins.

___ **Flagging**, ID-123, Pennsylvania DOT. Emphasises the importance of flagging, 13:45mins.

___ **Flagging and the Flagger**, ID-122, Pennsylvania DOT. The program emphasises flagging procedures and operations. The work sites depicted are for reference purposes only. The What, Where, When, Why, Who and PRIDE of flagging. June 17, 1987, 18:41mins.

___ **Guardrail Installation and Repair**, ID-115, Northwest T2 Center and Alaska Transportation Technology Transfer Program, 20mins.

___ **Ideas That Make A Difference**, ID-124, Pennsylvania DOT. Ideas that promote safety and efficiency and save time and money. Ideas that worked. January 1984, 10mins.

___ **Road Management Systems**, ID-117, USACRREL, is directed at management level personnel and explains the benefits of a management system, 5:41mins.

___ **Tank Closure Without Tears: An Inspector's Safety Guide**, ID-119, The New England Interstate Water Pollution Control Commission, guidelines and procedures that should be followed before, during, and after the process of tank closure. Safety is the keypoint. 30mins.

___ **Unsurfaced Road Inspection**, ID-116, USACRREL, is directed at inspectors to ensure they understand the importance of accurate data collection, 7:50mins.

___ **Unsurfaced Road Management**, ID-118, USACRREL, explains how to use the systems for unsurfaced roads and is intended for the county engineer or highway superintendent, 8:54min.

VIDEOS PERTAINING TO NEWSLETTER ARTICLES:

___ **Blading Unpaved Roads**, ID-8, FHWA/NACE, 4/88, 22min. For the motorgrader operator, this tape demonstrates the basics of maintaining unpaved roads, complementing the NACE book on blading.

___ **Guardrail Maintenance**, ID-22, Utah DOT, 15min. This tape covers procedures for repairing typical sections, turned down end sections, and bridge connection for the maintenance worker.

___ **The Importance of Roadway Drainage**, ID-27, Transportation Information Exchange, 50 min. A lecture-style training tape emphasizes the importance of good roadway drainage, and stresses the need for a proper inventory of culverts, drainage areas, and problem areas.

___ **Inlay Patching Using A Large Coldplaner**, ID-99, Oregon DOT, 17min. Effects of multiple inlay patching and the correct procedure for inlay patching using a large coldplaner.

___ **Inlay Patching Using A Small Coldplaner**, ID-100, Oregon DOT, 17min. Effects of multiple inlay patching and the correct procedure for inlay patching using a small coldplaner.

Alaskan Transportation Technology Transfer Program

Notes on Publications and Videos

- ___ **Maintain Drainage**, ID-33, Utah DOT, 12 min. Discusses the importance of maintaining drainage, and steps to be taken by workers when maintaining culverts, drop inlets, and catch basins.
- ___ **Maintaining Gravel Roads in Arkansas**, ID-97, Arkansas Center for Technology Transfer, geared toward Foreman, Motor Grader Operators and anyone that works with maintaining gravel roads, 23min.
- ___ **Maintain Non-Hard Surfaces**, ID-34, Utah DOT, 9min. Covers procedures for maintaining non-hard road surfaces with a motorgrader.
- ___ **Motor Grader**, ID-38, 2 parts, 33min. Part I discusses start up and daily maintenance, and part II discusses basic maneuvering and shut down.
- ___ **Operator Daily Maintenance of Motor graders**, ID-44, FHWA/IRF, 21min. Describes general daily maintenance procedures for motorgrader operators, video supplement publication ID-680.
- ___ **Patching with Hand Tools**, ID-47, Utah DOT, 12min. This video illustrates the correct procedures for patching asphalt pavements with hand tools.
- ___ **Patching Unpaved Roads**, ID-46, FHWA, 11min, video supplement publication ID-680.
- ___ **Pavement Maintenance (Part 4) - Patching and Crack Filling**, ID-51, Montana State University/The Asphalt Institute, 55min. Lecture tape discusses various types of patching and the repair of cracks, potholes, and other pavement surface distresses. Concentrates mainly on asphalt concrete pavements.
- ___ **Pavement Maintenance (Part 9) - Specialty Maintenance Products**, ID-56, Montana State University/The Asphalt Institute, 25min. Lecture tape discusses several proprietary products used in pavement maintenance, including rejuvenators or recycling agents, surface sealer, crack sealers, fabric and membrane interlays, and patching materials.
- ___ **Pavement Structure Repair Techniques (Tape 1)**, ID-104, Tape 1, Includes: Maintenance of Gravel Roads, 27min; Ditch Maintenance, 17min; Pothole Patching, 17:10min; Crack Sealing, 15:48min; Basic Traffic Control, 10:32min, USDOT/FHWA, Video Supplements available, refer to publications list ID-659 to 663, 88min.
- ___ **Planning and Organizing Winter Operations**, ID-82, Penn DOT, 12min. Describes preparations for winter operations, ordering parts and materials, stock piles, checking drainage areas, rental agreements, snow plowing map, crew and staff meetings.
- ___ **Safety Features for Local Roads and Streets Part-II**, ID-64, FHWA, 60min. Contains crash tests of traffic barriers on slopes, guardrail end treatments, bridge railings and transitions, bridge railing retrofits, new impact absorbing traffic barriers, and mailboxes.
- ___ **Smoothing and Reshaping of Earth and Gravel Roads**, ID-66, FHWA/IRF, 1985, 21min. This tape covers the equipment needed and procedures to follow when smoothing or reshaping gravel roads with a grader, video supplement publication ID-680.

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